Docket No.: HEWAYS.015A6 May 8, 2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant	:	Edwin C. Iliff
App. No	:	09/785,044
Filed	:	February 14, 2001
For	:	AUTOMATED DIAGNOSTIC SYSTEM AND METHOD INCLUDING REUSE OF DIAGNOSTIC OBJECTS
Examiner	:	Joon H. Hwang
Art Unit	:	2166

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John M. Carson, Reg. No. 34,303

ON APPEAL TO THE BOARD OF PATENT APPEALS AND INTERFERENCES
APPEAL BRIEF

Mail Stop Appeal Brief -- Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Appeal Brief relates to an appeal to the Board of Patent Appeals and Interferences of the final rejection set forth in a final Office Action mailed August 13, 2007, in the above-captioned application.

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I. REAL PARTY IN INTEREST

The real party in interest to this appeal is the assignee of the present application, Clinical Decisional Support, LLC. Assignee is the owner of one-hundred percent interest in the present application.

Initially, inventor Edwin Iliff assigned his rights in this application to First Opinion Corporation as evidenced by the assignment recorded at Reel No. 012913, Frame 0951 by the Assignment Branch of the United States Patent and Trademark Office. Subsequently, First Opinion Corporation assigned its rights in this application to Clinical Decisional Support, LLC as evidenced by the assignment recorded at Reel No. 019716, Frame 0845 by the Assignment Branch of the United States Patent and Trademark Office.

II. RELATED APPEALS AND INTERFERENCES

Appellant, Appellant's legal representative and Assignee are unaware of any prior or pending appeal, interference or judicial proceeding that may be related to, that may directly affect, that may be directly affected by, or that may have a bearing on the Board's decision in the present appeal. Because of this lack of knowledge, no decisions are included in the appendix labeled RELATED APPEALS AND INTERFERENCES.

III. STATUS OF CLAIMS

Currently, the following status exists for each of the claims: Claims 1-52 stand rejected. The rejections of Claims 1-52 are being appealed.

IV. STATUS OF AMENDMENTS

Independent Claims 1 and 11 were amended in an After Final Response to Office Action, filed December 6, 2007. In an Advisory Action, mailed December 31, 2007, the Examiner indicated that for purposes of the appeal, the proposed amendments would be entered. Therefore, the claims before the Board appear as they were rejected.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The following summary maps the independent claims to the specification by paragraph number. This summary may use representative portions of the specification and does not intend to map every location in which description of claim limitations can be found. Moreover, the following information should not be interpreted to limit the claims beyond the broadest reasonable interpretation. For convenience, the following quoted paragraph numbers will be with reference to the application as published rather than the application as filed.

A. Claim 1

Claim 1 recites:

providing a plurality of disease objects, each disease object associated with a plurality of symptom objects; (see Fig. 3, element 304; see also Fig. 5, element 502; see also Fig. 29a, element 2903)

assigning a weight for each symptom, wherein a particular disease object includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more related alternative symptoms, (see Fig. 11, element 1108; see also Fig. 30, elements 3012 and 3036) wherein the alternative symptoms for a particular preferred symptom are selected from a set of archived symptom objects that are available for reuse; (see Fig. 31, elements 3100, 3110, and 3112)

selecting a disease object applicable to a patient; and (see Fig. 4, elements 416, 420, 424, 426, and 430)

invoking a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to output a diagnosis of a patient based on the object invocation. (see Fig. 1, elements 130 and 182; see also Fig. 5, elements 502, 512, 518, 524, 528, 532, and 534)

B. Claim 6

Claim 6 recites: a plurality of objects which interact to determine a diagnosis of a patient, wherein the objects includes at least two diagnostic objects comprising: (see Fig. 1, elements 120, 130, 182; see also Fig. 29b, elements 2920, 2930, 2940, 2950, 2960, 2970, and 2980)

a disease object, a symptom object, a valuator object, a question object, a node object and a candidates object, wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects is input to another of the objects; and

(see Fig. 29a, element 2902; see also Fig. 29b, elements 2921, 2922, 2931, 2932, 2941, 2942, 2951, 2952, 2961, 2962, 2971, 2972, 2981, and 2982)

at least one of the diagnostic objects directly invokes another of the diagnostic objects in a computer-based medical diagnostic system so as to output a diagnosis of a patient based on the prior object invocation. (see Fig. 29b, elements 2921, 2922, 2931, 2932, 2941, 2942, 2951, 2952, 2961, 2962, 2971, 2972, 2981, and 2982; see also paragraph [0086]; see also paragraph [0304])

C. Claim 9

Claim 9 recites:

a plurality of diagnostic objects which interact to determine a diagnosis of a patient, (see Fig. 1, elements 120, 130, 182; see also Fig. 29b, elements 2920, 2930, 2940, 2950, 2960, 2970, and 2980)

wherein the diagnostic objects include at least a plurality of disease objects, a plurality of symptom objects and a plurality of valuator objects, and (see Fig. 29b, elements 2921, 2922, 2931, 2932, 2941, 2942, 2951, 2952, 2961, 2962, 2971, 2972, 2981, and 2982)

wherein at least some of the diagnostic objects perform their own tasks and directly call upon other diagnostic objects to perform their tasks at the appropriate time in a computer-based medical diagnostic system so as to output a diagnosis of a patient. (see Fig. 29b, elements 2921, 2922, 2931, 2932, 2941, 2942, 2951, 2952, 2961, 2962, 2971, 2972, 2981, and 2982; see also paragraph [0086]; see also paragraph [0304])

D. Claim 11

Claim 11 recites:

providing a plurality of disease objects, each disease object associated with a plurality of symptom objects; (see Fig. 3, element 304; see also Fig. 5, element 502; see also Fig. 29A, element 2903)

assigning a weight for each symptom, wherein a particular disease object includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more alternative symptoms, (see Fig. 11, element 1108; see also Fig. 30, element 3012 and 3036)

wherein the alternative symptoms for a particular preferred symptom are selected from a set of archived symptom objects that are available for reuse, (see Fig. 31, elements 3100, 3110 and 3112) and

wherein the particular preferred symptom has one or more related alternative symptoms that represent different approaches for eliciting further diagnostic information related to a same patient health condition; (see Fig. 30, elements 3034 and 3036);

selecting a disease object applicable to a patient (see Fig. 4, elements 416, 420, 424, 426, and 430); and

invoking a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to output a diagnosis of a patient based on the object invocation. (see Fig. 1, elements 130 and 182; see also Fig. 5, elements 502, 512, 518, 524, 528, 532, and 534).

VI. ISSUES TO BE REVIEWED ON APPEAL

The first issue before the Board is whether the subject matter of each of Claims 6-10, 20-42 and 49-51 qualify as patentable subject matter under 35 U.S.C. § 101.

The second issue before the Board is whether the subject matter of each of Claims 48-49 and 51-52 contain written description support as required by 35 U.S.C. § 112¶1.

The third issue before the Board is whether the subject matter of each of Claims 6-9, 20-27, 29-38, 40-42, and 49-51 is anticipated by U.S. Patent No. 5,868,669, issued to Iliff under 25 U.S.C. §102(b).

The fourth issue before the Board is whether the subject matter of each of Claims 1, 3-5, 10-13, 15-19, 43-48 and 52 is obvious over U.S. Patent No. 5,868,669, issued to Iliff, in view of U.S. Patent No. 6,149,585, issued to Gray; whether the subject matter of Claims 2 and 14 is obvious over U.S. Patent No. 5,868,669, issued to Iliff, in view of U.S. Patent No. 6,149,585, issued to Gray, in further view of U.S. Patent No. 6,598,035 issued to Branson et al.; and whether the subject matter of Claims 28 and 39 is obvious over U.S. Patent No. 5,868,669, issued to Iliff, in view of U.S. Patent No. 6,598,035 issued to Branson et al., under 35 U.S.C. §103(a).

VII. APPELLANT'S ARGUMENT

A. As They Are Directed To A New And Useful Machine, Claims 6-10, 20-42, and 49-51 Comprise Patentable Subject Matter Under §101

1. The Examiner's Grounds For Rejection

Claims 6-10, 20-42, and 49-51 stand rejected under 35 U.S.C. §101, as being directed to non-statutory subject matter. The Examiner has rejected independent Claims 6 and 9 under 35 U.S.C. § 101, stating that the claims "lack the necessary physical articles or objects to constitute a machine or manufacture within the meaning of 35 U.S.C. 101… [t]hey are at best, functional descriptive material per se."[1] The Examiner states that Claims 7-8, 10, 20-42, and 49-51 (claims dependent on either Claim 6 or Claim 9) are likewise rejected.

2. Appellant Argument

Appellant respectfully submits that the rejected claims are directed to patentable subject matter as the claims are directed to a machine that is useful and accomplishes a practical application.

Claim 6 is an independent claim and recites:

> An object based automated computer-implemented diagnostic system comprising:
>
> a plurality of objects which interact to determine a diagnosis of a patient, wherein the objects includes at least two diagnostic objects comprising:
>
> a disease object, a symptom object, a valuator object, a question object, a node object and a candidates object, wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects is input to another of the objects; and
>
> at least one of the diagnostic objects directly invokes another of the diagnostic objects in a computer-based medical diagnostic system so as to output a diagnosis of a patient based on the prior object invocation.

Under 35 U.S.C. §101, "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore …."[2] Appellant respectfully submits that Claim 6 constitutes a patentable invention under 35 U.S.C. §101 as it is directed to a machine.

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[1] Advisory Action at 2; Final Office Action at 4

[2] 35 U.S.C. §101 (West 2008).

In *Ex parte Fressola*, this Board stated that a system is an apparatus.[3] As Claim 6 describes a "computer-implemented diagnostic system," application of *Ex parte Fressola* dictates that the claim be considered an "apparatus" claim. Moreover, this Board has also established that "[c]laims in apparatus form conventionally fall into the 35 U.S.C. Section 101 statutory category of a 'machine.'"[4] Accordingly, the "computer-implemented diagnostic system" of Claim 6 is an apparatus which falls under the protectible statutory category of a "machine," constituting patentable subject matter under 35 U.S.C. §101.

As the subject matter of Claim 6 is directed to a "machine," Appellant respectfully disagrees with the Examiner's statement that Claim 6 "lack[s] the necessary physical articles or objects to constitute a machine." The claim element, whereby "at least one of the diagnostic objects directly invokes another of the diagnostic objects in a computer-based medical diagnostic system so as to output a diagnosis of a patient based on the prior object invocation," provides the physical elements necessary to constitute a machine. This limitation describes software objects on a computer-implemented diagnostic system (i.e., a computer). The objects interact to output a patient diagnosis. The claimed invention thus comprises a system that includes software objects, which are structurally and functionally interrelated on a computer, to achieve a patient diagnosis. As the software objects recited in Claim 6 function in the context of a computer, the claim possesses the necessary physical articles or objects to constitute a machine.

Further, the claimed invention constitutes patentable subject matter under 35 U.S.C. § 101 as the claimed invention, as a whole, is useful and accomplishes a practical application.[5] That is, it produces a "useful, concrete and tangible result."[6]

An invention is "useful" if it satisfies the utility requirement of Section 101.[7] The utility requirement provides that the utility of an invention must be (i) specific, (ii) substantial and (iii) credible.[8] The requirement whereby a claim must have specific and substantial utility excludes "throw-away," "insubstantial," or "nonspecific" uses, e.g., using a complex machine as a

3 *Ex parte Fressola*, 27 U.S.P.Q.2d 1608, 1611 (B.P.A.I. 1993) ("A 'system' is an 'apparatus.'") (citing *In re Walker*, 618 F.2d 758, 762 n.2 (CCPA 1980)).

4 *Ex parte Donner*, 53 U.S.P.Q.2d 1699, 1700 (B.P.A.I. 1999).

5 MPEP 2106(II)(A), 8th Edition, Revision 6 (September 2007).

6 *Id* (Citing *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 149 F.3d 1368, 1373-74, 47 USPQ2d 1596, 1601-02 (Fed. Cir. 1998).

7 MPEP 2106(IV)(C)(2)(2)(a), 8th Edition, Revision 6 (September 2007).

8 MPEP § 2107 and Fisher, 421 F.3d at 1372, 76 USPQ2d at 1230 (citing the Utility Guidelines with approval for interpretation of "specific" and "substantial").

paperweight. The utility of Claim 6 is that it is a machine capable of providing a patient diagnosis. This utility is specific and substantial and does not encompass a "throw-away" use. Further, the MPEP states if an Applicant asserts that if the claimed invention is useful for a particular purpose (i.e., has a "specific and substantial utility") and there has been no question of the credibility of this statement, the invention fulfills the "utility" requirement. [9] As Appellant has asserted that the claimed invention is useful for a particular purpose (i.e., has a "specific and substantial utility") and there has been no question of the credibility of this statement, Claim 6 is useful under the "utility" requirement of Section 101.

For an invention to be "tangible," a claim must set forth a practical application to produce a real-world result.[10] In other words, the result must not be "abstract."[11] Claim 6 describes a machine capable of producing a diagnosis of a patient's medical condition based on an analysis of symptoms. Such a diagnosis is required by the practice of medicine and must be established before a treatment is prescribed to improve or stabilize the patient's medical condition. Adequate healthcare resulting from a satisfactory diagnosis is essential for modern society, as is the use of computers and software to facilitate this good. The analysis of the patient symptoms is a practical application of the computer implemented system designed to produce a real-world result, a patient diagnosis, and cannot be considered an abstract application. Accordingly, the invention embodied by Claim 6 is tangible.

A concrete result is one that can be substantially repeatable.[12] The question of whether an invention produces a "concrete" result arises when a result cannot be assured.[13] There is no such question in the instant case. The diagnostic objects of Claim 6, when presented with identical parametric input, will produce identical results. Accordingly, the invention of Claim 6 produces a "concrete" result as the result is substantially repeatable.

Claim 6 encompasses a "computer-based medical diagnostic system" that "outputs a diagnosis of a patient." Appellant respectfully submits that this computer-implemented system constitutes a "machine" producing a useful, tangible, and concrete result under 35 U.S.C. § 101.

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9 MPEP 2107(II)(B)(1) 8th Edition, Revision 6 (September 2007) ("[i]f the applicant has asserted that the claimed invention is useful for any particular practical purpose (i.e., it has a "specific and substantial utility") and the assertion would be considered credible by a person of ordinary skill in the art, do not impose a rejection based on lack of utility").

10 MPEP 2106(IV)(C)(2)(2)(b), 8th Edition, Revision 6 (September 2007) (citing *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972) (invention ineligible because had "no substantial practical application.").

11 *Id.*

12 MPEP 2106(IV)(C)(2)(2)(c), 8th Edition, Revision 6 (September 2007).

13 Id. (citing *In re Swartz*, 232 f.3d 862, 864 (Fed. Cir. 2000)).

Accordingly, the invention of Claim 6 constitutes protectible subject matter under 35 U.S.C. §101.

Appellant respectfully requests withdrawal of the §101 rejection and allowance of Claim 6 as the rejected claim is directed to patentable subject matter.

Claim 9

Claim 9 is an independent claim and recites:

> An object based automated diagnostic system comprising a plurality of diagnostic objects which interact to determine a diagnosis of a patient, wherein the diagnostic objects include at least a plurality of disease objects, a plurality of symptom objects and a plurality of valuator objects, and wherein at least some of the diagnostic objects perform their own tasks and directly call upon other diagnostic objects to perform their tasks at the appropriate time in a computer-based medical diagnostic system so as to output a diagnosis of a patient.

In rejecting Claim 9, the Examiner presents the same bases for rejection as presented in Claim 6. Claim 9 incorporates the feature, wherein "the diagnostic objects perform their own tasks and directly call upon other diagnostic objects to perform their tasks at the appropriate time in a computer-based medical diagnostic system so as to output a diagnosis of a patient." Like Claim 6 discussed above, Claim 9 encompasses a "computer-based medical diagnostic system" capable of outputting a patient diagnosis. Appellant respectfully submits that for at least the same reasons as discussed above for Claim 6, Claim 9 describes a "machine" capable of producing a "useful," "tangible," and "concrete" result and thus constitutes protectible subject matter under 35 U.S.C. § 101.

Accordingly, Appellant respectfully requests withdrawal of the §101 rejection and allowance of Claim 9 as the rejected claim is directed to patentable subject matter.

Claims 7-8, 10, 20-42, and 49-51

Claims 7-8, 10, 20-42, and 49-51 are dependent from either independent Claim 6 or independent Claim 9. The dependent claims are patentable for at least the reasons discussed above for Claims 6 and 9.

B. As The Inventor Was In Possession of The Claimed Invention At The Time Of Filing, Claims 48-49 and 51-52 Satisfy the Written Description Requirement Under §112, ¶1

1. The Examiner's Grounds For Rejection

In the Final Office Action, the Examiner had rejected Claims 48-49 and 51-52 as failing to comply with the written description requirement. In reply to the Response After Final, the Examiner states in the Advisory Action that the specification supports "each disease object is elected/invoked by the system, not by a disease object," thereby implying that the specification does not support the limitation common to rejected claims 48-49 and 51-52, whereby one "disease object directly invokes another disease object."

2. Appellant Argument

Appellant respectfully disagrees with the Examiner's two-fold argument. First, Appellant respectfully submits that the specification provides ample support for Claims 48-49 and 51-52. Second, Appellant respectfully submits that the limitation, whereby "each disease object is elected/invoked by the system," is compatible with the limitation, whereby "the disease object directly invokes another disease object."

To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention.[14] Dependent Claim 48 recites "[t]he system of Claim 6, wherein the disease object directly invokes another disease object." Claims 49 and 51-52 contain limitations nearly identical to the limitation whereby "the disease object directly invokes another disease object." Appellant respectfully submits that this limitation is adequately supported by the specification to enable a person skilled in the art to conclude that the inventor had possession of the claimed invention.

Paragraph [0086] of the specification describes how one disease object invokes another disease object and provides a specific example of its application:

> One key concept of the OB method is to think of disease and symptom objects as representing the medical experts inside the computer. If we ask the Appendicitis Disease Object to look at a patient, the object looks at the patient data, notes that the patient does indeed complain of abdominal pain and nausea--but then

[14] *See, e.g., Moba, B.V. v. Diamond Automation, Inc., 325 F.3d 1306, 1319, 66 USPQ2d 1429, 1438 (Fed. Cir. 2003); Vas-Cath, Inc. v. Mahurkar, 935 F.2d at 1563, 19 USPQ2d at 1116.*

> "notices" the appendectomy scar! Obviously, appendicitis can be ruled out,; but instead of shrugging its shoulders and giving up, the Appendicitis Disease Object now invokes another disease object that is an expert in, say, Small Bowel Obstruction. That object takes a look, asks some questions, and passes the patient on to still other disease objects. In effect, a huge number of diagnostic experts are gathered at the patient's bedside, and each object gets a turn at evaluating the patient data in terms of its own symptom pattern.[15]

In the example, the Appendicitis Disease Object is unable to provide a diagnosis based on the patient data. The Appendicitis Disease Object then invokes another disease object to resolve the symptoms. Software objects are software structures that are combinations of data and processes that manipulate the data. These software objects, particularly the disease objects, function within the system to output a diagnosis of a patient. Just as medical experts consult other medical experts when unable to resolve symptoms and provide a diagnosis, the disease objects of the present invention consult or invoke other disease objects in formulating a diagnosis based on the patient data. For certain inventive aspects, one of skill in the art may be a computer programmer having been trained to program with objects and possessing some knowledge of medicine or a medical professional having object-based programming skills. Accordingly, Appellant respectfully submits that the disclosure of the specification describes the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention.

Moreover, Appellant respectfully disagrees with that Examiner's contention that the limitation, whereby the "each disease object is elected/invoked by the system," is incompatible with the limitation, whereby "the disease object directly invokes another disease object." The inventive system inherently contains disease objects. Specifically, Figure 29a illustrates a disease object as one of the objects in the inventive system. Accordingly, the disease objects are part of the inventive system. And as part of the system, when one disease object invokes another disease object, it is only a matter of perspective to label the event as a disease object directly invoking another disease object or the system invoking a disease object. Furthermore, the system may invoke one object after another without there being a direct invocation of the latter object by the former object. Accordingly, if a "disease object directly invokes another disease object," this is not exclusive of "each disease object [being] elected/invoked by the system," as contended by

[15]U.S. Patent Publication No. 2002/0068857, paragraph [0086].

the Examiner. Appellant respectfully submits that the disclosure of the specification describes the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention.

Accordingly, Appellant respectfully requests withdrawal of the §112, ¶1 rejection and allowance of Claims 48-49 and 51-52.

C. As The U.S. Patent No. 5,868,669 ("Iliff") Fails To Teach A Diagnostic Object Invoking Another Diagnostic Object, Claims 6-9, 20-27, 29-38, 40-42, and 49-51 Are Novel Over The Referenced Art

The Examiner has rejected Claims 6-9, 20-27, 29-38, 40-42, and 49-51 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,868,669 ("Iliff").

1. Independent Claim 6

a. The Examiner's Grounds For Rejection

With respect to Claim 6, the Examiner states that Iliff teaches an object based automated computer implemented diagnostic system comprising a plurality of objects which interact to determine a diagnosis of a patient, wherein the objects include at least two diagnostic objects comprising: a disease object, a symptom object, a valuator object, a question object, a node object, and a candidate object, wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects in input to another of the objects.

b. Appellant Argument

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Iliff does not teach every element of independent Claim 6. Claim 6 specifically recites diagnostic objects:

> a disease object, a symptom object, a valuator object, a question object, a node object and a candidates object, wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects is input to another of the objects; and at least one of the diagnostic objects directly invokes another of the diagnostic objects.

In contrast, as discussed and agreed to at the interview, the Iliff reference uses traditional procedural diagnostics, and just mentions the possibility of programming in an object oriented

language such as C++. Programming in an object oriented language such as C++ is a general technological tool that is different than precisely specifying the diagnostic objects recited in Claims 6. Further, there is no discussion in Iliff of diagnostic objects where at least one of the diagnostic objects directly invokes or calls upon another of the diagnostic objects. Accordingly, the Iliff reference fails to disclose, either expressly or inherently, each and every element as set forth in independent Claim 6. Therefore, Iliff cannot anticipate independent Claims 6. Appellant respectfully requests withdrawal of the §102(b) rejection and allowance of Claim 6.

2. Independent Claim 9

a. The Examiner's Grounds For Rejection

With respect to Claim 9, the Examiner states that Iliff teaches an object based automated diagnostic system comprising a plurality of diagnostic objects which interact to determine a diagnosis of a patient, wherein the diagnostic objects include at least a plurality of disease objects, a plurality of symptom objects, and a plurality of valuator objects, and wherein at least some of the diagnostic objects perform their own tasks and call upon other diagnostic objects to perform their tasks at the appropriate time in a computer-based medical diagnostic system so as to output a diagnosis of a patient.

b. Appellant Argument

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Iliff does not teach every element of independent Claim 9. Claim 9 specifically recites diagnostic objects:

> wherein the diagnostic objects include at least a plurality of disease objects, a plurality of symptom objects and a plurality of valuator objects, and wherein at least some of the diagnostic objects perform their own tasks and directly call upon other diagnostic objects to perform their tasks at the appropriate time

As discussed above, in contrast to the diagnostic objects used in Claim 9, Iliff uses traditional procedural diagnostics, and just mentions the possibility of programming in an object oriented language such as C++. Programming in an object oriented language such as C++ is not the same thing as specifying the diagnostic objects recited in Claims 9. If such logic were to be

followed, then knowledge of automotive design and manufacturing would identify the specific output of the factory, whether it be a Toyota Prius or a Chevrolet Corvette. Further, there is no discussion in Iliff of diagnostic objects where at least one of the diagnostic objects directly invokes or calls upon another of the diagnostic objects. Accordingly, the Iliff reference fails to disclose, either expressly or inherently, each and every element as set forth in independent Claim 9. Therefore, Iliff cannot anticipate independent Claims 9. Appellant respectfully requests withdrawal of the §102(b) rejection and allowance of Claim 9.

3. Dependent Claims 7-8, 20-27, 29-38, 40-42, and 49-51

Although Appellant has not addressed all the issues of the dependent claims, Appellant respectfully submits that Appellant does not necessarily agree with the characterization and assessments of the dependent claims made by the Examiner, and Appellant believes that each claim is patentable on its own merits. Dependent claims 7-8, 20-27, 29-38, 40-42, and 49-51 are dependent either directly or indirectly on one of the above-discussed independent claims. Appellant respectfully submits that pursuant to 35 U.S.C. § 112, ¶4, the dependent claims incorporate by reference all the limitations of the claim to which they refer and include their own patentable features, and are therefore in condition for allowance. Therefore, Appellant respectfully requests withdrawal of the §102(b) rejection and allowance of Claims 7-8, 20-27, 29-38, 40-42, and 49-51.

D. As The Combination of Iliff, U.S. Patent No. 6,149,585 ("Gray") And U.S. Patent No. 6,598,035 ("Branson") Fail To Teach Symptom Objects That Are Invoked To Output A Diagnosis Of A Patient, Claims 1, 3-5, 10-13, 15-19, 43-48 and 52 Are Non-Obvious And Patentable Over The Referenced Art

Claims 1, 3-5, 10-13, 15-19, 43-48 and 52 stand rejected under 35 U.S.C. § 103(a) as being obvious over Iliff in view of U.S. Patent No. 6,149,585 ("Gray"). Claims 2 and 14 stand rejected under 35 U.S.C. § 103(a) as being obvious over Iliff in view of Gray and further in view of U.S. Patent No. 6,598,035 ("Branson"). Claims 28 and 39 stand rejected under 35 U.S.C. § 103(a) as being obvious over Iliff in view of Branson.

1. Independent Claims 1 and 11

a. The Examiner's Grounds For Rejection

With respect to Claims 1 and 11, the Examiner states that Iliff teaches providing a plurality of disease objects, each disease object associated with a plurality of symptom objects. The

Examiner goes on to state that Iliff teaches: assigning a weight for each symptom; alternative symptoms for a particular preferred symptom are selected from a set of archived symptom objects that are available for reuse; and, selecting a disease object applicable to a patient; invoking a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to output a diagnosis of a patient based on the object invocation. The Examiner states that Iliff does not explicitly disclose a preferred weight and an alternative weight; however, Gray discloses a plurality of disease associated with a plurality of symptoms in a medical diagnostic enhancement system. The Examiner goes on to state that Gray discloses assigning a weight for one or more preferred symptoms and an alternative weight for one or more related alternative symptoms, wherein the alternative symptoms are selected from a set of symptoms. The Examiner concludes that it would have been obvious to one of skill in the art to utilize the teachings of Gray to the system of Iliff in order to present an accurate diagnosis.

b. Appellant Argument

M.P.E.P. § 2143.03 recites that to properly state a claim rejection under 35 U.S.C. §103(a), all claim limitations must be taught or suggested. To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.[16] "All words in a claim must be considered in judging the patentability of that claim against the prior art."[17]

The cited references do not teach every element of the independent Claims 1 and 11. Claim 1 (and similarly Claim 11) recites in pertinent part: "selecting a disease object applicable to a patient; and invoking a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to output a diagnosis of a patient based on the object invocation."

In contrast, as discussed and agreed to at the interview conducted with the Examiner on May 1, 2007, the Iliff reference uses traditional procedural diagnostics and merely mentions the possibility of programming in an object oriented language such as C++ . The specific programming language does not, in any way, disclose or teach the objects recited in Claims 1 and 11. There is no discussion in the Iliff reference of objects, much less specific types of objects, that could be designed and the way that the objects could interact. I.e., the use of objects requires

[16] *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).
[17] *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

designing a new software architecture which is not related to the procedural main loop/subroutine architecture disclosed in the Iliff reference. To argue otherwise would be akin to saying that knowledge of the assembly line for the Form Model T with mention of automation could disclose a robotic assembly line that would produce an SUV.

Furthermore there is no discussion of archived symptom objects in the Iliff reference. Appellant's Claim 1 (and similarly Claim 11) recites "wherein the alternative symptoms for a particular preferred symptom are selected from a set of archived symptom objects that are available for reuse." In rejecting the relevant claims, the Examiner identified Figure 6, col. 13, lines 6-29, and col. 39, lines 36-57 of Iliff as teaching this feature. Figure 6 shows a medical history objects database, which is described in col. 23 as being "a catalog of unique alphanumeric codes, each code corresponding to a medical condition or diagnosis that is not expected to change during the life of the patient (e.g., a diagnosis for asthma is coded as "RWHAST")". The database can also contain clinical sounds or images. The portion of the Iliff reference at col. 13, lines 6-29 describes additional medical codes such E942.1. The portion of the Iliff reference at col. 39, lines 36-57 describes examples of diagnostic screening questions for headache. None of these citations describe symptom objects that are invoked so as to output a diagnosis of a patient based on the object invocation, as recited in pertinent part in Claim 1 (and similarly in Claim 11): "invoking a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to output a diagnosis of a patient based on the object invocation." Although the specification has been referenced for explanatory purposes, it is not intended that the claims shall be limited to specific embodiments provided in the specification.

The deficiencies of the Iliff reference are not cured by either Gray or Branson. Accordingly, the Examiner has not established a *prima facie* case of obviousness as the cited art fails to teach or suggest all the limitations of the rejected claims. Accordingly, Appellant respectfully requests withdrawal of the §103(a) rejection and allowance of Claims 1 and 11.

2. Dependent Claims 2-5, 10, 12-19, 43-48, and 52

Although Appellant has not addressed all the issues of the dependent claims, Appellant respectfully submits that Appellant does not necessarily agree with the characterization and assessments of the dependent claims made by the Examiner, and Appellant believes that each claim is patentable on its own merits. The dependent claims are dependent either directly or indirectly on one of the above-discussed independent claims. Appellant respectfully submits that

pursuant to 35 U.S.C. § 112, ¶4, the dependent claims incorporate by reference all the limitations of the claim to which they refer and include their own patentable features, and are therefore in condition for allowance. Therefore, Appellant respectfully requests withdrawal of the §103(a) rejection and allowance of Claims 2-5, 10, 12-19, 43-48, and 52.

VIII. CLAIMS APPENDIX

(Claims as finally rejected)

1. (Previously Presented) A method of diagnosing a patient through the reuse of medical script objects used in the automated diagnosis or management of a medical condition, the method comprising:

providing a plurality of disease objects, each disease object associated with a plurality of symptom objects;

assigning a weight for each symptom, wherein a particular disease object includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more related alternative symptoms, wherein the alternative symptoms for a particular preferred symptom are selected from a set of archived symptom objects that are available for reuse;

selecting a disease object applicable to a patient; and

invoking a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to output a diagnosis of a patient based on the object invocation.

2. (Original) The method defined in Claim 1, additionally comprising assigning a new name for a symptom object that is reused.

3. (Original) The method defined in Claim 1, wherein the set of archived symptom objects is stored in a database.

4. (Original) The method defined in Claim 3, additionally comprising accessing the set of archived symptom objects stored in the database via a global computer network.

5. (Previously presented) The method defined in Claim 1, wherein each symptom object has underlying objects used to establish the symptom, wherein the objects are arranged in a hierarchical relationship.

6. (Previously presented) An object based automated computer-implemented diagnostic system comprising:

a plurality of objects which interact to determine a diagnosis of a patient, wherein the objects includes at least two diagnostic objects comprising:

a disease object, a symptom object, a valuator object, a question object, a node object and a candidates object, wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects is input to another of the objects; and

at least one of the diagnostic objects directly invokes another of the diagnostic objects in a computer-based medical diagnostic system so as to output a diagnosis of a patient based on the prior object invocation.

7. (Original) The system of Claim 6, wherein the objects include a plurality of disease objects and a plurality of symptom objects.

8. (Original) The system of Claim 6, additionally comprising an engine object to coordinate the other objects.

9. (Previously presented) An object based automated diagnostic system comprising a plurality of diagnostic objects which interact to determine a diagnosis of a patient, wherein the diagnostic objects include at least a plurality of disease objects, a plurality of symptom objects and a plurality of valuator objects, and wherein at least some of the diagnostic objects perform their own tasks and directly call upon other diagnostic objects to perform their tasks at the appropriate time in a computer-based medical diagnostic system so as to output a diagnosis of a patient.

10. (Previously presented) The system of Claim 9, wherein at least one of the plurality of disease objects includes a preferred weight for a preferred symptom and an alternative weight for one or more alternative symptoms of the preferred symptom.

11. (Previously presented) A computer-implemented method of diagnosing a patient through the reuse of medical script objects used in the automated diagnosis or management of a medical condition, the method comprising:

providing a plurality of disease objects, each disease object associated with a plurality of symptom objects;

assigning a weight for each symptom, wherein a particular disease object includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more alternative symptoms, wherein the alternative symptoms for a particular preferred symptom are selected from a set of archived symptom objects that are available for reuse, and wherein the particular preferred symptom has one or more related alternative symptoms that represent different approaches for eliciting further diagnostic information related to a same patient health condition;

selecting a disease object applicable to a patient; and

invoking a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to output a diagnosis of a patient based on the object invocation.

12. (Previously presented) The method of Claim 11, wherein the one or more alternative symptom is a plurality of symptoms, wherein the alternative weight is a plurality of alternative weights, and wherein the alternative weights for the plurality of alternative symptoms of the particular preferred symptom are different.

13. (Previously presented) The method of Claim 12, wherein the alternative weights for the one or more alternative symptoms of the particular preferred symptom and the preferred weight of the particular preferred symptom are different.

14. (Previously presented) The method of Claim 11, additionally comprising assigning a new name for a symptom object that is reused.

15. (Previously presented) The method of Claim 11, wherein the set of archived symptom objects is stored in a database.

16. (Previously presented) The method of Claim 15, additionally comprising accessing the set of archived symptom objects stored in the database via a global computer network.

17. (Previously presented) The method of Claim 11, wherein each symptom object has underlying objects used to establish a symptom.

18. (Previously presented) The method defined in Claim 1, wherein the reuse includes using one of the archived symptom objects in conjunction with a plurality of disease objects.

19. (Previously presented) The method defined in Claim 1, wherein a particular preferred symptom is selected when a particular diagnosis is likely.

20. (Previously presented) The system of Claim 6, wherein the objects include a disease object, a symptom object, a valuator object, a question object, a node object and a candidates object.

21. (Previously presented) The system of Claim 20, wherein the symptom object invokes the valuator object.

22. (Previously presented) The system of Claim 20, wherein the valuator object invokes the question object.

23. (Previously presented) The system of Claim 20, wherein the question object invokes the node object.

24. (Previously presented) The system of Claim 6, wherein a particular disease is associated with a plurality of disease objects corresponding to different phases of the particular disease.

25. (Previously presented) The system of Claim 6, wherein a particular disease is associated with a plurality of disease objects corresponding to different populations for the particular disease.

26. (Previously presented) The system of Claim 6, wherein a particular disease object is representative of a plurality of related diseases that share common symptoms.

27. (Previously presented) The system of Claim 6, wherein the objects act independently of other objects and a particular object retains a record of its actions for future reference.

28. (Previously presented) The system of Claim 6, wherein each object has corresponding data and processes, and wherein the data is encapsulated so that other objects only see the processes of a particular object that can be invoked to access the data.

29. (Previously presented) The system of Claim 6, wherein a particular disease object monitors the questions and answers of other disease objects.

30. (Previously presented) The system of Claim 8, wherein the engine object coordinates a plurality of concurrently operating disease objects by switching execution among the disease objects.

31. (Previously presented) The system of Claim 9, wherein one of the symptom objects invokes one of the valuator objects.

32. (Previously presented) The system of Claim 9, wherein the plurality of objects includes a plurality of question objects and node objects.

33. (Previously presented) The system of Claim 32, wherein one of the valuator objects invokes one of the question objects.

34. (Previously presented) The system of Claim 32, wherein one of the question objects invokes one of the node objects.

35. (Previously presented) The system of Claim 9, wherein a particular disease is associated with a plurality of disease objects corresponding to different phases of the particular disease.

36. (Previously presented) The system of Claim 9, wherein a particular disease is associated with a plurality of disease objects corresponding to different populations for the particular disease.

37. (Previously presented) The system of Claim 9, wherein a particular disease object is representative of a plurality of related diseases that share common symptoms.

38. (Previously presented) The system of Claim 9, wherein the objects act independently of other objects and a particular object retains a record of its actions for future reference.

39. (Previously presented) The system of Claim 9, wherein each object has corresponding data and processes, and wherein the data is encapsulated so that other objects only see the processes of a particular object that can be invoked to access the data.

40. (Previously presented) The system of Claim 9, wherein a particular disease object monitors the questions and answers of other disease objects.

41. (Previously presented) The system of Claim 9, additionally comprising an engine object to coordinate the other objects.

42. (Previously presented) The system of Claim 41, wherein the engine object coordinates a plurality of concurrently operating disease objects by switching execution among the disease objects.

43. (Previously presented) The method of Claim 11, wherein the reuse includes using one of the archived symptom objects in conjunction with a plurality of disease objects.

44. (Previously presented) The method of Claim 11, wherein a particular preferred symptom is selected when a particular diagnosis is likely.

45. (Previously presented) The method of Claim 1, wherein a particular disease is associated with a plurality of disease objects corresponding to different phases of the particular disease.

46. (Previously presented) The method of Claim 1, wherein a particular disease is associated with a plurality of disease objects corresponding to different populations for the particular disease.

47. (Previously presented) The method of Claim 1, wherein a particular disease object is representative of a plurality of related diseases that share common symptoms.

48. (Previously presented) The method of Claim 1, wherein the selected disease object directly invokes another of the plurality of disease objects.

49. (Previously presented) The system of Claim 6, wherein the disease object directly invokes another disease object.

50. (Previously presented) The system of Claim 6, wherein the disease object directly invokes the symptom object.

51. (Previously presented) The system of Claim 9, wherein one of the plurality of disease objects directly calls another of the plurality of disease objects.

52. (Previously presented) The method of Claim 11, wherein the selected disease object directly invokes another of the plurality of disease objects.

IX. EVIDENCE APPENDIX

NONE

X. RELATED PROCEEDINGS APPENDIX

NONE

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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